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FR-A-2 232 302
US-A-2 563 555

CHEMICAL ABSTRACTS, vol. 94, no. 20, May 1981, abstract no. 162592n, Columbus, Ohio, US

CHEMICAL ABSTRACTS, vol. 98, no. 7, April 1983, page 373, no. 113528v, Columbus, Ohio, US

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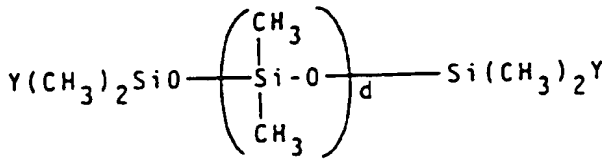
Description

This invention relates to pigmented cosmetic products in stick, cake, or cream form such as eyeshadows, foundations, moisturizers, and skin protectants. More specifically, the invention relates to such cosmetic products which contain a silicone base, e.g. mixtures of rganopolysiloxane liquid components. This mixture includes a dimethylpolysiloxane liquid component having the chemical formula



(1)

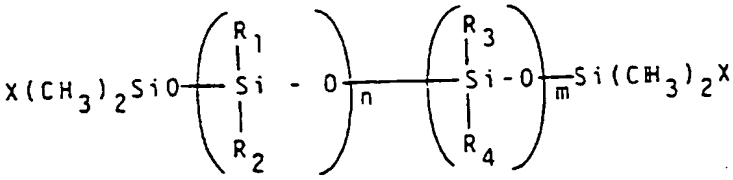
wherein both Y substituents are —CH_3, or both are —OH, and in which the degree of polymerization d is a value, typically between 1 and 150, effective to give the fluid a viscosity of 0.65 to 10^6 mm^2/s (centistokes) at 25°C (viscosity of such fluids can be measured by widely recognized test methods, such as the spinning cup test);

and at least an organosilane liquid component having the formula

(2)

wherein R is alkyl having 1 to 30 carbon atoms, or aryl;

an organopolysiloxane liquid component having the formula



(3)

wherein

R_1 and R_3 are independently alkyl having 1 to 30 carbon atoms, or aryl;

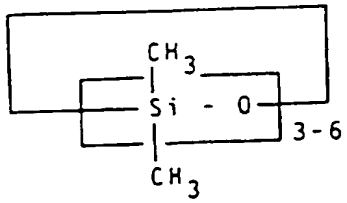
X is alkyl or alkyl-oxy and has 1 to 30 carbon atoms;

R_4 is alkyl having 1 to 30 carbon atoms, or aryl;

R_2 is alkyl having 2 to 30 carbon atoms, aryl, or —$OSi(CH_3)_3$; and

n is 1 to 100, m is 0 to 100, and (n plus m) is 1 to 100; and/or

a cyclomethicone liquid component having the formula



(4)

Although dimethylpolysiloxane and other silicone fluids offer the properties of water repellency, slip, non-greasy emollience, and low penetration of the skin, their use in anhydrous pigmented cream, cak and stick products is limited by the difficulty of dispersing inorganic pigments in the silicone base. The result is that such products contain only small amounts of pigment, or contain pigment which forms uneven color streaks in the final product.

It is therefore highly desirable to incorporate inorganic cosmetic pigments readily into a cosmetic product which contains a silicone fluid or a mixture of such fluids.

The publication "Chemical abstracts", vol. 94, No. 20, May 1981, abstract No. 162592N discloses a heat-treated cosmetic powder comprising an inorganic pigment such as mica, kaolin, talc and so on, pulverised and mixed with a polysiloxane, and dimethyl polysiloxane in the range of 12 wt.%.

U.S. Patent No. 2,563,555 discloses a composition comprising an inorganic pigment such as titanium dioxide with a substituted polysiloxane film on the surface of the individual particles, and a polymerized methyl-substituted polysiloxan has b en described in said reference.

A composition comprising in rganic pigments with attached m thyltrimethoxysilane and dimethylpolysiloxane has also been disclosed in the publication "Chemical abstracts", vol. 98, No. 7, April 1983 abstract No. 113528V. The inventi n comprises anhydrous, pigmented cosmetic products comprising mixtures of dimethylpolysiloxane having the formula (1) with the organo-polysiloxan s having formula (2),

(3) or (4) given below, or mixtures thereof, in which th pigment is easily dispersed and remains uniformly distributed without separating or segregating even at the unusually high pigment contents of 40 to 60 wt.%.

The more dispersible pigment comprises hydrophobic, finely divided particles of in rganic pigment whose surface is chemically bonded t , and physically completely coated by, polysiloxane.

By "more dispersible" we mean that by comparison to the same pigment in uncoated form, the coated pigment is dispersed uniformly throughout the cosmetic composition more easily and quickly during formulation of the composition, and it stays dispersed instead of settling or segregating out of the composition.

Cosmetic compositions in accordance with this invention contain 10 to 70 wt.% of a combination of compound (1) and one or more compounds having formulas (2), (3), or (4), provided that at least 10 wt.% of the composition is dimethylpolysiloxane of formula (1). The other silicone compounds, any on , two, or three of which are included with the dimethylpolysiloxane, can be included in any amount provid d that the total of silicones (1)—(4) is up to 70 wt.% and provided that the combination of those compounds is a stable, homogeneous one-phase mixture at room temperature (25°C). The preferred range of the total amount of compounds of formulas (1)—(4) is 20—50 wt.%, in which case dimethylpolysiloxane c mprises at least 20 wt.% of the composition.

Formula (2) is an organosilane:

$$RSi(CH_3)_3 \qquad (2)$$

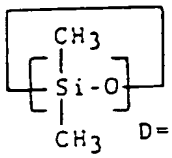
wherein R is alkyl having 1 to 30 carbon atoms, or aryl.

Formula (3) is an organo-polysiloxane:

$$X(CH_3)_2SiO\left(\begin{array}{c}R_1\\|\\Si-O\\|\\R_2\end{array}\right)_n\left(\begin{array}{c}R_3\\|\\Si-O\\|\\R_4\end{array}\right)_m Si(CH_3)_2X \qquad (3)$$

wherein R_1 and R_3 are independently alkyl having 1 to 30 carbon atoms or aryl; X is alkyl or alkyl-oxy and has 1 to 30 carbon atoms; R_2 is alkyl having 2 to 30 carbon atoms, aryll, or trimethylsiloxy ($(CH_3)_3SiO$—); R_4 is alkyl having 1 to 30 carbon atoms, or aryl; n is 1 to 100; m is 0 to 100; and (n plus m) is 1 to 100.

Formula (4) is cyclomethicone:



(4)

As used herein, "alkyl" and the alkyl moiety of alkyl-oxy includes straight- and branched-chain aliphatic groups containing 1 to 30 carbon atoms; examples include methyl, ethyl, octyl, and octadecyl. Preferred aryl groups include phenyl and groups in which a phenyl ring is connected to the Si by an alkyl or alkylene bridge up to 3 carbon atoms long, such as styryl.

Preferred dimethylpolysiloxanes of formula (1) have a viscosity of 5×10^{-6} to 5×10^{-4} m^2/s (5 to 500 centistokes).

Examples of organo-polysiloxanes of formula (3) where m equalls zero are polymethyloctyl-siloxane, polymethyloctadecyl-siloxane, polyphenyltrimethylsiloxy-siloxane, polymethylphenyl-siloxane, and octadecyloxydimethylpolydimethyl-siloxane. Examples where n and m are both non-zer include polymethyl/polymethylphenyl-siloxane, polymethylstyryl/polymethylæthyl-siloxane, and polymethylstyryl/polymethyldodecyl-siloxane. In this nomenclature, the one or two substituents named after "poly" are each attached to the silicon atom in each repeating unit, and substituents before "poly" are attached to both ends of the polymer chain. To illustrate, "polymethyloctyl-siloxane" is a compound of formula (3) in which m is zero, R_1 is methyl, and R_2 is octyl. Furthermore, the term "polymethylstyryl/polymethyldodecyl-siloxane" means a compound of formula (3) wherein R_1 is methyl, R_2 is styryl (e.g. $C_6H_5CH{:}CH$—), R_3 is methyl, and R_4 is dodecyl (e.g. $C_{12}H_{25}$—).

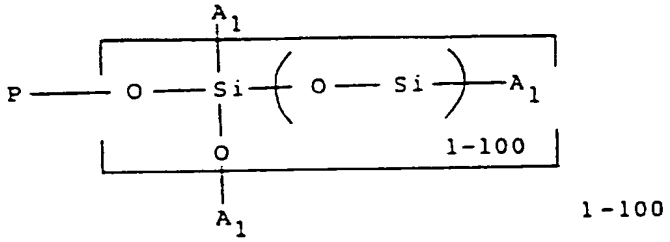
The cosmetic composition can also contain 4 to 20 wt.% and preferably 6 to 15 wt.% of a c smetically acceptable wax; those of ordinary skill in this art will readily identify what is meant by this term. Examples are carnauba, ozokerite, glyceryl tribehenate, beeswax, candelilla, paraffin, bayberry wax, lan lin, microcrystalline wax, montan, rice wax, mono-, di-, and triglycerol esters of C_{12}—C_{36} fatty acids, polyethylene, polyethylene/polyvinyl acetate copolymers, polyethylene/polyacryllic acid copolymers, C_{12}—C_{36} fatty alcohols, and C_{12}—C_{36} fatty alcohol esters of C_{12}—C_{36} fatty acids, provided that the wax is solid at ro m temperature (25°C). The waxes are further characterized in that they have crystallin to microcrystalline

structure; leave a film when applied to the skin from a cosmetic stick or cream; have low viscosity just above their melting points; and exhibit low solubility at room temperature in the dimethylpolysiloxane described hereinabove. Typically the waxes are high-molecular-weight hydrocarbons (C_{12}—C_{100}) or mixtures thereof, and esters of high-molecular-weight (C_{12}—C_{36}) fatty acids with high molecular-weight (C_{12}—C_{30}) fatty alcohols, and mono-, di-, or triesters of C_{12}—C_{36} fatty acids with glycerol.

If the cosmetic composition contains wax, it should contain enough of an organo-polysiloxane of formula (3) described above to provide that the composition, whether it is a stick, a cake, or a cream, is a single homogeneous phase. That is, above the melting point of the highest-melting ingredient one should be able to stir together a molten mixture of the three components (dimethylpolysiloxane, organo-polysiloxane, and wax) easily using conventional mixing equipment; and then, on discontinuing stirring, the components should not separate into discrete layers or areas of different composition. Likewise, when a stirred, molten mixture of the three components is cooled to 25°C, the cooled product should remain one continuous phase and the wax should not ooze, bleed, or otherwise separate from the siloxane and/or silane components. In general, the proper relative amounts of wax and the two silicone components can readily be determined by examination of the behavior of a sample formulation; as a general guide to formulations known to be successful, the weight percentage of the wax can be up to about one-third of the combined weight percentage of the silicone components, and the weight ratio of organo-polysiloxane (3) to dimethylpolysiloxane can be up to about 1:1. Variations from these figures are also contemplated within the broad aspect of the present invention, however, so long as the proportions chosen permit the creation of a physically stable one-phase cosmetic product. Further disclosure regarding this invention is contained in another application filed on even date herewith entitled "One-Phase Silicone-Based Cosmetic Products Containing Wax" filed by Marlene Tietjen, Jane Hollenberg, and Richard Rigg (under publication number EP—A—0 133 964).

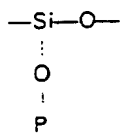
The anhydrous cosmetic composition of this invention also contains pigment which remains uniformly dispersed in the silicone better than has heretofore been known. The coated pigment is characterized by its complete hydrophobicity. That is, it is impossible to suspend or disperse even a very small amount of the coated pigment in water. The coating does not affect the color; the coated pigment exhibits the same color as the uncoated pigment. The coating is polysiloxane which is chemically bonded to the pigment; it is believed to be bonded through oxygen atoms to the surface of the pigment.

The coated pigment can exhibit structural formula



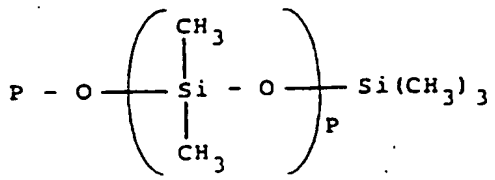
(5)

wherein each of the oxygen atoms at the left end of formula (5) is attached to an atom P in the pigment surface; and A_1 is an alkyl or alkenyl group having up to 30 carbon atoms. A number of adjacent polysiloxane chains as shown in (5) can be cross-linked through oxygen atoms to form a polysiloxane chain with up to 100 repeating



units that extends along the pigment surface, in addition to the polysiloxane chain which extends away from the pigment surface. Examples of alkyl groups are methyl, ethyl, octyl, and octadecyl. "Alkenyl" includes carbon chains with more than one double bond; examples of alkenyl groups include ethylene, propylene, acrylyl, methacrylyl, and residues of unsaturated fatty acids such as oleic (e.g. $C_{17}H_{33}$—), linoleic ($C_{17}H_{31}$—), and linolenic ($C_{17}H_{29}$—).

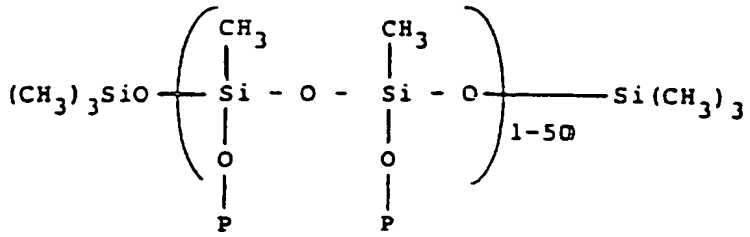
The coated pigment can also exhibit structural formula (6)



(6)

wherein p is 1—100, and P is an atom in the pigment surface.

The coated pigment can also exhibit structural formula (7)



(7)

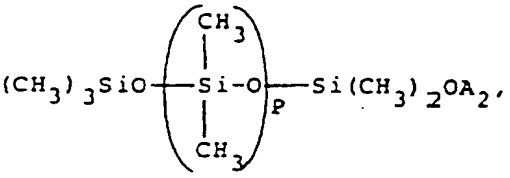
wherein P is an atom in the pigment surface, and in which each of the up to 100 repeating (Si—O) units is bonded through an oxygen atom to the pigment surface.

The number of polysiloxane chains of formulas (5), (6), and (7) that are bonded to the pigment surface is not known but is sufficiently high to coat the pigment completely and render it completely hydrophobic; hydrophobicity can readily be determined by placing the coated pigment into water and observing whether any becomes dispersed or suspended in the water.

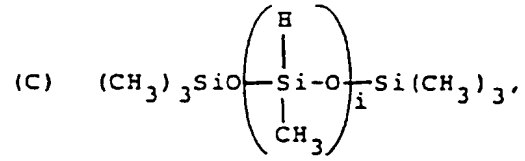
Suitable pigments include all inorganic pigments which are usable in cosmetic formulations. Particular examples include talc, mica, titanium dioxide, iron oxide, kaolin, ultramarine, chromium oxide, chromium hydroxide, zinc oxide, silica, manganese violet, and their equivalents.

The pigment (or a mixture of two or more pigments) can be coated by placing it in dry, finely divided form in a mixer and adding a silicone material selected from

(A) $A_1SiX_1X_2X_3$, wherein A_1 is an alkyl or alkenyl group having 1 to 30 carbon atoms, and X_1, X_2, and X_3 are independently chloro, methoxy, or ethoxy (this material will form coated pigment having formula (5));



wherein p is 1 to 100 and A_2 is hydrogen or an alkyl group having 1 to 30 carbon atoms (this material will form coated pigment having formula (6));



wherein i is 1 to 100 (this material will form coated pigment having formula (7)); or a one-phase mixture of two or all three of A, B, and C. The relative amounts of fluid : pigment should be sufficient to coat the pigment particles; generally a fluid:pigment weight ratio is satisfactory for which 1—4 wt.% of the final product is silicone. The pigment and fluid are intimately mixed thoroughly to obtain a uniform dispersion of the fluid on the pigment, in which the fluid completely coats the particles of pigment. The slurrying operation is advantageously carried out at a temperature of 25°C to 160°C effective to promote hydrolysis and reaction of the silicone with the pigment. As an alternative to synthesis, satisfactory coated pigments usable in this invention are sold in a wide variety of shades by Whittaker, Clark & Daniels, Inc., doing business as Clarks Colors; the product has the trade name Hydrophobes.

To make the cosmetic composition of the invention, one stirs the dimethylpolysiloxane component (1) with any other liquid components (such as silicone component (2), (3), and/or (4) if liquid at room temperature) to achieve a uniform mixture. Any of the components which are initially dry (such as fillers, preservatives, and pigments, including the coated pigments described herein) are then added to the liquid mixture and dispersed using high shear equipment (such as a 3-roll mixer or Kady mill) until a homogeneous dispersion is obtained. This dispersion is then heated to a point above the melting temperature of the wax material which is to be added (usually 60—95°C). The wax, and any silicone component which is solid at room temperature, are added and stirred with a high-shear mixer until all components are melted and dispersed uniformly. The melted mixture is poured hot (at 60—95°C) into the containers of choice, e.g. pans, jars, or sticks.

The resulting product can be used per se as a cosmetic which is applied to soothe and moisturize the skin. One can also add optional ingredients such as cosmetically acceptable fillers, preservatives, and/or

fragrance. Dry ingredients are added in finely divided form to the molten mixture, with stirring, before the mixture is poured into containers. Examples of fillers (added alone or in combination) are talc, mica, nylon, silica, kaolin, zinc oxide, magnesium silicat , calcium silicate, calcium carbonate, and equivalent materials, added in amounts up to 35% by weight of the final product. Another feature of th present invention is that th filler(s) can also be silic ne-coated in the same manner as the pigments described her in. Examples of preservatives are methyl and propyl parabens, and equivalents thereof, in amounts up to 0.5 wt.%. The cosmetic formulator will recognize that any of the well-known blends of fragrance oils conventionally sold by fragrance manufacturers can be added, in amounts generally ranging up to 0.5 wt.%.

The composition can contain up to 20 wt.% of one or more cosmetically acceptable oils, to furth r augment the feel of the product on the skin and to adjust the product's consistency. Suitable oils are glycerol esters and C_3—C_{22} alcohol esters of C_3—C_{22} fatty acids, and C_{12}—C_{22} fatty alcohols, provided that they are liquid at 25°C and form homogeneous mixtures with the cosmetic composition. A preferred example is 2-ethyl-1-hexyl palmitate. The ordinarily skilled formulator will recognize that other compounds known to be equivalent to those listed herein can be incorporated into the composition of this invention.

Utilization of this discovery renders the pigment easily dispersible in the formulation. The discovery also permits the preparation of products in which the pigment remains uniformly dispersed without separation. These properties are particularly advantageous at pigment contents over 10 wt.% and even more so when the pigment content is over 40 wt.%, e.g. 40—60 wt.%. Satisfactory pigmented products with such high pigment contents were previously thought impractical or unobtainable because of the difficulty of dispersing such a high amount of pigment in the oily base. This development is particularly unexpected in view of the knowledge that pigments do not disperse well in silicone-based oils. By "pigment" we mean to include a pigment composition which is made by intimately blending amounts of two or more other unblended pigments.

Utilization of the coated pigment allows incorporation of more pigment (generally 10—20% more into an anhydrous cosmetic composition than is otherwise attainable. The higher pigment level provid s a smooth, dry feeling makeup which has excellent slip characteristics due to the silicone fluid base.

The one-phase, anhydrous, pigmented composition preferably contains 40—60 wt.% of the coated pigment. The balance can comprise the silicone compounds (1) and (2), (3) and/or (4). Alternatively, the composition can contain optional cosmetically acceptable filler, fragrance, oil, and/or wax components. Examples of these components and typically acceptable amounts thereof are listed above.

The coated pigment and other finely divided solid particles have a size generally no larger than 50 µm. It will be recognized that materials such as mica, whose crystalline properties favor formation of flakes, will be finely divided and will be up to 150 µm in the long dimension.

The invention is further described in the following Examples.

In each Example, all components that are liquid at 25°C were mixed together at room temperature, and then the dry ingredients (preservatives, fillers, pigments) were mixed into the liquid using high-sh ar equipment. When the resulting mixture was homogeneous and all solid components were uniformly dispersed, the mixture was heated to above the melting point of the wax that was about to be added (or above the highest melting point if more than one wax was added), and then the wax was added and stirred into the mixture. If the organopolysiloxane is a solid at 25°C, it was added at the same time as the wax. The entire mixture was stirred using conventional equipment (Lightnin brand mixer or Kady brand mill) until a uniform mixture was obtained. The mixture was poured hot (60—95°C) into its intended package. No phas separation or component segregation occurred during or after cooling of the product. All solid ingredients, including coated pigments, were added in finely divided form.

A foundation was prepared using this procedure except that the pigments were not coated with any silicone:

Foundation

		[wt.%]
Glyceryl tribehenate		6.0
Polymethyloctadecylsiloxane		6.0
2-ethyl-1-hexyl palmitate (oil)		13.0
Dimethylpolysiloxane (1×10^{-5} m^2/s)		25.0
Pigment		
Titanium dioxide	17.0	
Iron oxide	5.0	
Talc	15.0	
Mica	13.0	50.0

The melt viscosity of the above formulation was too high to permit it to be poured into containers. The surface of the product exhibited color striations and a mottled appearance, which indicated poor dispersion of the pigment in the product. WHen the pigment components were provided with a coating having formula (7) prior to incorporation into the composition, there resulted a pourable, homogenous product. The high pigment level became an advantage rather than a drawback, and provided a smooth, dry feeling product.

Other examples, which were prepared the same way as above, in which the pigment was coated prior to addition, were:

Cream Powder Foundation

	[wt.%]	
	A	B
Glyceryl tribehenate	6.0	10.0
Polymethyloctadecyl siloxane	6.0	—
2-ethyl-1-hexyl palmitate (oil)	13.0	15.0
Dimethylpolysiloxane (1×10^{-5} m^2/s)	25.0	30.0
Pigment*:		
Titanium dioxide	20.0	14.5
Iron oxide	7.0	3.0
Talc	13.0	9.5
Mica	10.0	18.0

*The pigment had been coated with polymethyl hydrogen siloxane.

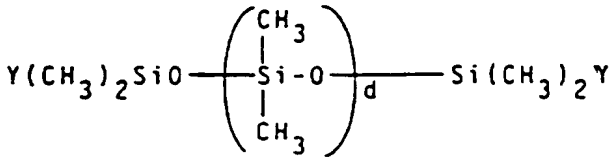
Eyeshadow

	[wt.%]	
Dimethylpolysiloxane		10.0
Glyceryl tribehenate		6.0
Candelilla		2.0
C_{12}—C_{15} alkyl benzoate ester		7.0
Cyclomethicone D=5		30.0
Bismuth oxychloride		5.0
Pigment*:		40.0
Chromium oxide	15.0	
Ultramarine blue	10.0	
Mica	15.0	

*The pigment had been coated with methyl-trimethoxy silane.

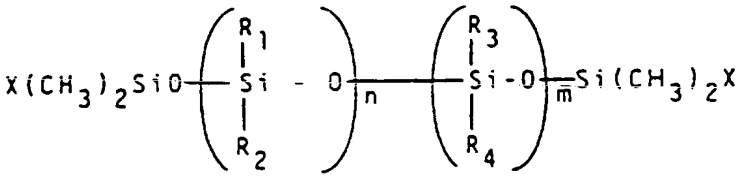
Claims

1. An anhydrous homogeneous pigmented cosmetic product comprising
(a) 10 to 70 wt.% of a one phase mixture of
(1) at least 10 wt.% of dimethylpolysiloxane having th formula



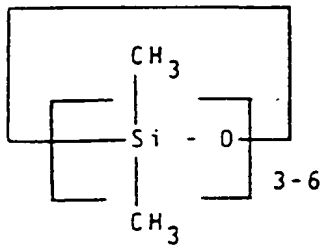
(1)

wherein both Y substituents are —CH_3, or both are —OH; whereiin d is 1 to 150, and the dimethylpolysiloxane has a viscosity of 0.65 to 10^6 mm^2/s (centistokes) at 25°C as measured by the spinning cup test; and at least one of
(2) organosilane having the formula $RSi(CH_3)_3$ wherein R is alkyl having 1 to 30 carbon atoms, or aryl;
(3) an organopolysiloxane having the formula



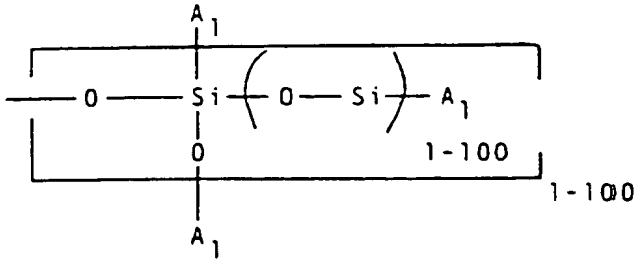
(3)

wherein
R_1 and R_3 are independently alkyl having 1 to 30 carbon atoms, or aryl;
X is alkyl or alkyl-oxy and has 1 to 30 carbon atoms;
R_4 is alkyl having 1 to 30 carbon atoms, or aryl;
R_2 is alkyl having 2 to 30 carbon atoms, aryl, or —$OSi(CH_3)_3$; and
n is 1 to 100, m is 0 to 100, and (n plus m) is 1 to 100; and/or
(4) a cyclomethicone having the formula

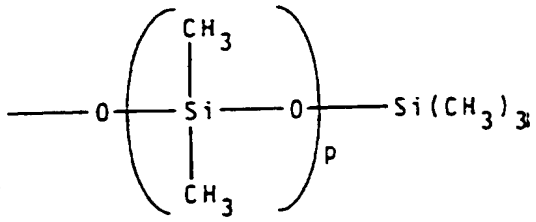


and
(b) a coated pigment which comprises finely divided particles of inorganic pigment whose surface is chemically bonded to, and physically completely coated by, a polysiloxane which coating renders the particles hydrophobic; wherein said pigment is readily dispersible in component (a) without settling or segregating.

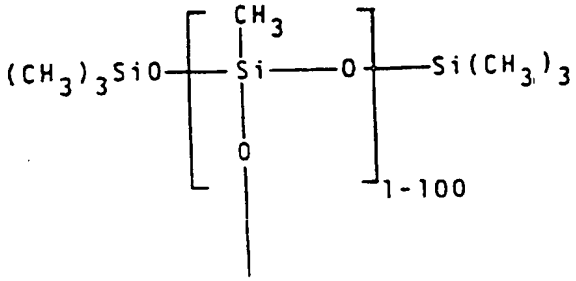
2. The composition of claim 1 wherein said polysiloxane coating exhibits the structure



wherein A_1 is an alkyl or alkenyl group having up to 30 carbon atoms; or the structure



wherein p is 1—100; or the structure



wherein there are enough of said chains bonded to each pigment particle to render the pigment hydrophobic.

3. The composition of claim 1 or 2 wherein said pigment comprises 40 to 60 wt.% of the coated pigment.

4. The composition of claims 1 and 3 further comprising from 4 to 20 wt.% of a cosmetically acceptable wax, provided that there is a sufficient amount of silicone component (3) that the product formed by melting said composition and then cooling it to 25°C is a single homogeneous phase.

5. The composition according to any of the preceding claims wherein at least one of R_1, R_2, R_3 and R_4 is alkyl.

6. The composition according to any of the preceding claims wherein the aryl group is phenyl or styryl.

7. The composition of any of the claims 1 to 6 wherein (1), (2), (3) and (4) comprise 20 to 50 wt.% f the total composition, and (1) comprises at least 20 wt.% of the total composition.

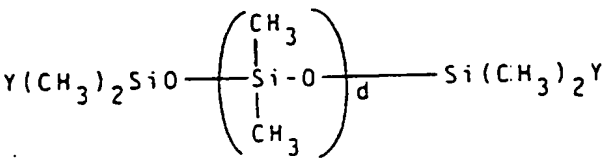
8. A composition according to claim 1 comprising by weight 6 wt.% wax, 6 wt.% polymethyloctadecyl siloxane, 13 wt.% of cosmetically acceptable oil, 25 wt.% of dimethylpolysiloxane (1×10^{-5} m^2/s), and 50 wt.% polysiloxane-coated pigment.

9. A composition according to claim 1 comprising by weight 10 wt.% wax, 15 wt.% cosmetically acceptable oil, 30 wt.% dimethylpolysiloxane (1×10^{-5} m^2/s), and 45 wt.% of a polysiloxane-c ated pigment.

10. A composition according to claim 1 comprising by weight 8 wt.% wax, 7 wt.% cosmetically acceptable oil, 30 wt.% cyclomethicone (D=5), 5 wt.% pigment, 40 wt.% polysiloxane-coated pigment, and 10 wt.% dimethylpolysiloxane (1×10^{-5} m^2/s).

Patentansprüche

1. Wasserfreies, homogenes, pigmentiertes kosmetisches Produkt enthaltend
(a) 10 bis 70 Gew.-% einer einphasigen Mischung aus
(1) wenigstens 10 Gew.-% eines Dimethylpolysiloxans gemäß der Formel

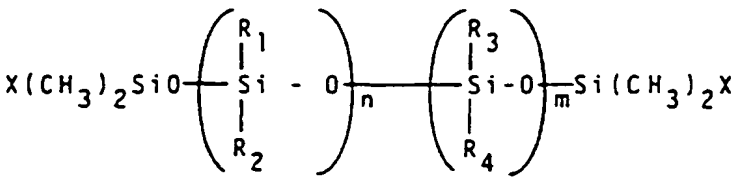


(1)

worin beide Y-Substituenten —CH_3 oder beide —OH bedeuten und d 1 bis 150 entspricht und wobei das Di methylp lysiloxan eine Viskosität von 0,65 bis 10^6 mm^2/s (Centistokes) bei 25°C, z.B. gemessen nach dem Wirbelbechertest, hat, und wenigstens eine Organosiliciumverbindung aus d r Gruppe der

(2) Organosilane gemäß der Form I $RSi(CH_3)_3$, worin R einen Alkylrest mit 1 bis 30 C-Atomen oder ein Arylrest ist,

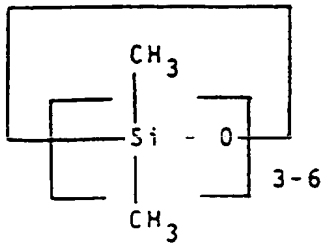
(3) Organopolysiloxane gemäß der Formel



(3)

worin R_1 und R_3 unabhängig voneinander ein Alkylrest mit 1 bis 30 C-Atomen oder ein Arylrest ist, X einem Alkyl- oder Alkyloxyrest mit 1 bis 30 C-Atomen entspricht, R_4 einen Alkylrest mit 1 bis 30 C-Atomen oder Arylrest darstellt, R_2 einen Alkylrest mit 2 bis 30 C-Atomen, einen Arylrest oder $—OSi(CH_3)_3$ bedeutet und n 1 bis 100, m 0 bis 100 sowie (n + m) 1 bis 100 sind, und/oder

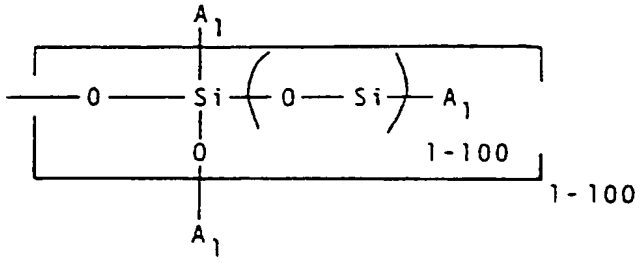
(4) cyclische Poly-dimethylsiloxane (Cyclomethicone) gemäß der Formel



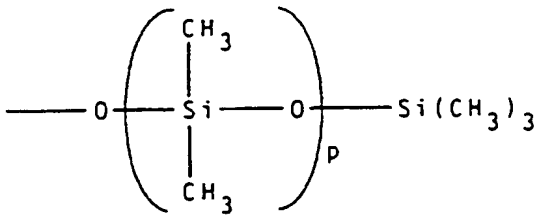
und

(b) ein überzogenes Pigment, gebildet aus feinzerkleinerten Teilchen eines anorganischen Pigments, dessen Oberfläche chemisch verbunden und physikalisch vollständig überzogen ist mit einem Polysiloxan, um die Teilchen hydrophob zu machen, wobei das Pigment in der Komponente (a) glatt dispergiert ist, ohne daß ein Absetzen oder Abtrennen eintritt.

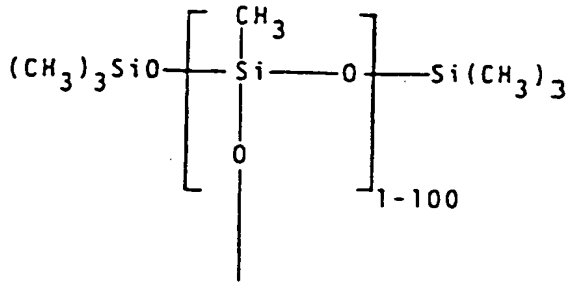
2. Produkt gemäß Patentanspruch 1, wobei der Polysiloxanüberzug die Struktur



worin A_1 eine Alkyl- oder Alkenylgruppe mit bis zu 30 C-Atomen ist, oder die Struktur



worin P 1 bis 100 bedeutet, oder di Struktur



aufweist, wobei genügend dieser Ketten an jedes Pigmentteilchen gebunden sind, um das Pigment zu hydrophobieren.

3. Produkt gemäß Patentanspruch 1 oder 2, worin 40 bis 60 Gew.% auf das überzogene Pigment entfallen.

4. Produkt gemäß den Patentansprüchen 1 bis 3, worin weiterhin 4 bis 20 Gew.-% eines kosmetisch akzeptierbaren Wachses mit der Maßgabe vorhanden sind, daß eine hinreichende Menge an d r Silikonkomponente (3) vorliegt, damit das beim Schmelzen der Zusammensetzung und Abkühlen auf 25°C erhaltene Produkt aus einer einzigen homogenen Phase besteht.

5. Produkt gemäß einem jeden der vorangehenden Patentansprüche, worin wenigstens einer der Substituenten R_1, R_2, R_3 und R_4 ein Alkyl ist.

6. Produkt gemäß einem jeden der vorangehenden Patentansprüche, worin die Arylgruppe Ph nyl oder Styryl ist.

7. Produkt nach einem jeden der Patentansprüche 1 bis 6, worin auf (1), (2), (3) und (4) 20 bis 50 Gew.-% der Gesamtzusammensetzung entfallen und (1) in einer Menge von wenigstens 20 Gew.-%, bezogen auf die Gesamtzusammensetzung, vorliegt.

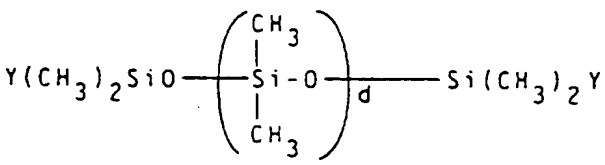
8. Produkt gemäß Patentanspruch 1, bestehend aus 6 Gew.-% Wachs, 6 Gew.-% Polymethyloctadecylsiloxan, 13 Gew.-% eines kosmetisch akzeptierbaren Öles, 25 Gew.-% Dimethylpolysiloxan (1×10^{-5} m²/s) und 50 Gew.-% polysiloxanüberzogenem Pigment.

9. Produkt gemäß Patentanspruch 1, bestehend aus 10 Gew.-% Wachs, 15 Gew.-% eines kosm tisch akzeptierbaren Öles, 30 Gew.-% Dimethylpolysiloxan (1×10^{-5} m²/s) und 45 Gew.-% polysiloxanüberzogenem Pigment.

10. Produkt gemäß Patentanspruch 1, bestehend aus 8 Gew.-% Wachs, 7 Gew.-% eines k smetisch akzeptierbaren Öles, 30 Gew.-% Cyclomethicone (D=5), 5 Gew.-% Pigment, 40 Gew.-% polysiloxanüb r-zogenem Pigment und 10 Gew.-% Dimethylpolysiloxan (1×10^{-5} m²/s).

Revendications

1. Produit cosmétique pigmenté homogène anhydre comprenant:
(a) 10 à 70% en poids d'un mélange à une phase de:
(1) au moins 10% en poids de diméthylpolysiloxane de formule:



(1)

dans laquelle les substituants Y représentent tous les deux —CH_3, ou bien représentent tous les deux —OH;

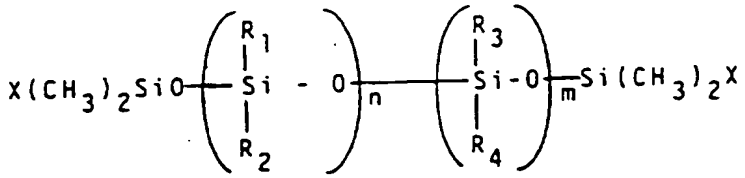
dans laquelle d vaut 1 à 150,

et le diméthylpolysiloxane présente une viscosité de 0,65 à 10^6 mm²/s (centistokes) à 25°C, t lle que mesurée par l'essai à la coupelle centrifuge;

et au moins l'un parmi

(2) un organosilane de formule $RSi(CH_3)_3$, dans laquelle R représente alkyle ayant de 1 à 30 atomes de carb ne, ou aryle;

(3) un organopolysiloxane de formule:

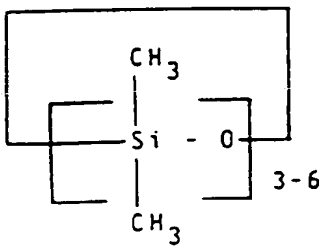


(3)

dans laquelle:
R_1 et R_3 représentent indépendamment alkyle ayant de 1 à 30 atomes de carbone, ou aryle;
X représente alkyle ou alkyl-oxy et possède de 1 à 30 atomes de carbone;
R_4 représente alkyle ayant de 1 à 30 atomes de carbone, ou aryle;
R_2 représente alkyle ayant de 2 à 30 atomes de carbone, aryle, ou —O·Si$(CH_3)_3$; et
n vaut 1 à 100, m vaut 0 à 100, et (n plus m) vaut 1 à 100;

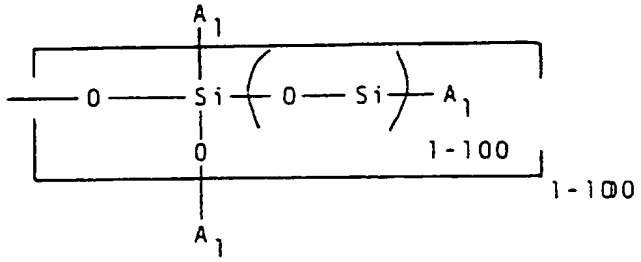
et/ou

(4) une cyclométhicone de formule:

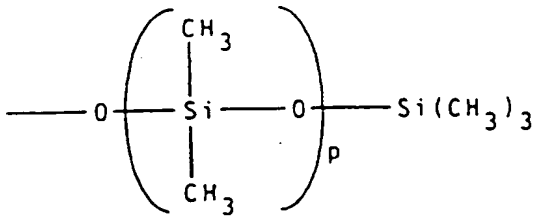


(b) un pigment enrobé qui comprend des particules finement divisées de pigment minéral dont la surface est liée chimiquement à, et est physiquement complètement enrobée par, un polysiloxane, cet enrobage rendant les particules hydrophobes; ledit pigment étant facilement dispersible dans le composant (a) sans sédimentation ni ségrégation.

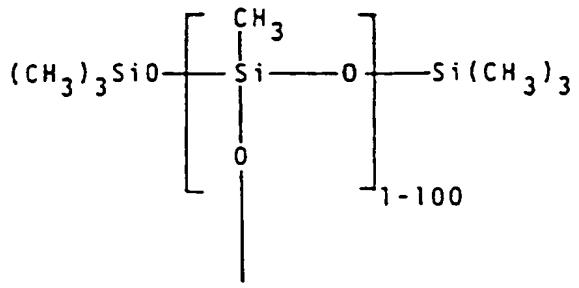
2. Composition selon la revendication 1, dans laquelle ledit enrobage de polysiloxane présente la structure:



dans laquelle A_1 représente un groupe alkyle ou alcényle ayant jusqu'à 30 atomes de carbone;
ou bien la structure:



dans laquelle p vaut 1—100;
ou bien la structure:



dans laquelle il y a suffisamment desdites chaines liées à chaque particule de pigment pour rendre le pigment hydrophobe.

3. Composition selon la revendication 1 ou 2, dans laquelle ledit pigment comprend 40 à 60% en poids du pigment enrobé.

4. Composition selon les revendications 1 et 3 comprenant en outre de 4 à 20% en poids d'une cire cosmétiquement acceptable, à la condition qu'il y ait une quantité suffisante de composant silicon (3) pour que le produit formé par fusion de ladite composition, puis refroidissement de celle-ci à 25°C soit une phase homogène unique.

5. Composition selon l'une des revendications précédentes, dans laquelle au moins l'un parmi R_1, R_2, R_3 et R_4 représente alkyle.

6. Composition selon l'une des revendications précédentes, dans laquelle le groupe aryle est un groupe phényle ou styryle.

7. Composition selon l'une des revendications 1 à 6, dans laquelle (1), (2), (3) et (4) forment 20 à 50% en poids de la composition totale, et (1) forme au moins 20% en poids de la composition totale.

8. Composition selon la revendication 1 comprenant, en poids, 6% en poids de cire, 6% en poids de polyméthyloctadécyl siloxane, 13% en poids d'huile cosmétiquement acceptable, 25% en poids de diméthylpolysiloxane (1×10^{-5} m^2/s), et 50% en poids de pigment enrobé de polysiloxane.

9. Composition selon la revendication 1 comprenant, en poids, 10% en poids de cire, 15% en poids d'huile cosmétiquement acceptable, 30% en poids de diméthylpolysiloxane (1×10^{-5} m^2/s), et 45% en poids de pigment enrobé de polysiloxane.

10. Composition selon la revendication 1 comprenant, en poids, 8% en poids de cire, 7% en poids d'huile cosmétiquement acceptable, 30% en poids de cyclométhicone (D = 5), 5% en poids de pigment, 40% en poids de pigment enrobé de polysiloxane, et 10% en poids de diméthylpolysiloxane (1×10^{-5} m^2/s).